



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,589	02/17/2006	Isao Ito	124196	4793
25944	7590	02/20/2009	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			LOPEZ, CARLOS N	
ART UNIT	PAPER NUMBER			
	1791			
MAIL DATE	DELIVERY MODE			
02/20/2009	PAPER			

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/539,589	ITO ET AL.
	<b>Examiner</b>	Art Unit
	CARLOS LOPEZ	1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-16 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3-5 and 9-12 is/are rejected.
- 7) Claim(s) 2,6-8 and 13-16 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 17 June 2005 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1668)  
Paper No(s)/Mail Date 5/7/08/6/17/05
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_

### **DETAILED ACTION**

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3-5, and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (PAT) in pages 1-4 of the filed specification in view of Rey et al (US 6,110,535). PAT discloses the claimed forming of green body by mixing and kneading materials and subsequently pre-firing and firing. PAT is silent disclosing a method of siliconization of the pre-fired ceramic.

However, Rey teaches a siliconization method for ceramic substrates by placing the substrates on honeycomb structure 12a that is filled with silicon metal powder 12b, so that the ceramic substrate when fired will infiltrate the ceramic structure. (See Col. 8, lines 37ff). Alternatively, the siliconization can be achieved by placing the ceramic substrate on a mixture of silicon powder with short fiber no longer than 10mm. (See col. 9, lines 50ff). An advantage of Rey's method is the siliconization of porous substrates in an industrial scale by treating a plurality of substrates simultaneously in a uniform manner. (Bridging paragraph of Col. 3-4). Hence, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have used the siliconization method of Rey to infiltrate silicon into the substrates of the PAT in order to treat a plurality of substrates simultaneously with silicon in a uniform manner.

As for claims 3-5, and 9, it would be obvious to a person of ordinary skill in the art to have used smaller silicone particles and circularity nearing 1 in order to fit more silicon material into the honeycomb compartments of structure 12a.

As for claims 10-12, example 10 shows that thickness of the honeycomb structure filled with silicon is 4mm, thus the layer of silicon powder formed in the honeycomb structure is 4mm.

***Allowable Subject Matter***

Claims 2, 6-8, 13-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the primary reason for indicating allowability of the above claims is that the prior art fails to disclose or reasonable suggest using the gorund material of the fired body as recited in claim 2 to then use it a source of infiltration material; nor does the prior art disclose a firing powder having a silicon content as claimed because the prior art uses powder that is substantially comprised of silicon.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS LOPEZ whose telephone number is (571)272-1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Carlos Lopez  
Primary Examiner  
Art Unit 1791

/ Carlos Lopez/  
Primary Examiner, Art Unit 1791